This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) An integrated repeater comprising:

a housing having opposing sides;

a donor antenna mounted closely adjacent to one of the opposing sides of said housing;

a null antenna mounted closely adjacent to the other of said opposing sides of said housing;

repeater electronics mounted in said housing and operatively interconnecting said donor antenna and said null antenna; and

a beamforming arrangement for creating a desired antenna pattern of said donor antenna and a desired antenna pattern of said null antenna.

2. (Original) The integrated repeater of claim 1 wherein said repeater electronics further include a downlink channel module and an uplink channel module operatively coupled between said donor and null antennas.

3. (Original) The integrated repeater of claim 1 wherein said donor antenna and said null antenna each comprise an antenna array having a plurality of antenna elements and wherein said beamforming arrangement includes a Butler matrix comprising a part of said repeater electronics and operatively coupled with each of said donor antenna array and said null antenna array.

4. (Original) The integrated repeater of claim 1 wherein said donor antenna and said null antenna each include separate transmit and receive antenna arrays.

5. (Original) The integrated repeater of claim 1 wherein each of said donor and null antennas comprise an antenna array comprising a plurality of patch antenna elements arranged in an M by N array.

6. (Original) The integrated repeater of claim 5 wherein said donor antenna and said null antenna each include separate transmit and receive antenna arrays.

7. (Original) The integrated repeater of claim 5 wherein each of said patch antenila elements comprises a reduced surface wave element.

8. (Original) The integrated repeater of claim 1 wherein said donor antenna and said null antenna each comprise an antenna array having a plurality of antenna elements and wherein said beamforming arrangement includes a plurality of stripline feeds of varying lengths coupled with said antenna elements and a switching circuit for selecting one or more of said striplines to achieve a desired stripline delay.

9. (Original) The integrated repeater of claim 1 wherein said repeater electronics further include an interference cancellation circuit for substantially cancelling radio
frequency interference feedback signals between said donor and null antennas in both an uplink path and a downlink path.

10. (Original) The integrated repeater of claim 1 wherein said repeater electronics further include a controller for providing setup, communications and monitoring functions for the repeater.

11. (Original) The integrated repeater of claim 9 wherein said repeater electronics further include a controller for providing setup, communications and monitoring functions for the repeater.

12. (Original) The integrated repeater of claim 1 wherein said donor antenna and said null antenna each comprise an antenna array having a plurality of antenna elements, wherein said beamforming arrangement comprises a Butler matrix comprising a part of said repeater electronics and operatively coupled with each of said donor antenna and said null antenna, and further including a memory for storing angle and elevation information for use in operating said Butler matrix.

13. (Original) The integrated repeater of claim 12 wherein said repeater electronics include amplifiers coupled intermediate said donor antenna and said null antenna and further including a controller for setting an amplifier gain of said amplifiers, using information stored in said memory.

14. (Original) The integrated repeater of claim 9 wherein said beamforming arrangement comprises a Butler matrix comprising a part of said repeater electronics and operatively coupled with each of said donor antenna and said null ahtenna and wherein said repeater electronics further include a memory for storing angle and elevation information for use in operating said Butler matrix.

15. (Original) The integrated repeater of claim 14 wherein said repeater electronics include amplifiers coupled intermediate said donor antenna and said null antenna and a controller which uses said memory for setting an amplifier gain of said amplifiers.

16. (Original) The integrated repeater of claim 1 wherein said donor antenna and said null antenna each comprise an antenna array having a plurality of antenna elements and wherein said beamforming arrangement includes a plurality of phase shifters respectively coupled with the antenna elements and each of said donor antenna array and said null antenna array, a controller for controlling operation of said phase shifting elements, and said phase shifting elements being coupled with a corporate feed to a radio frequency output.

17. (Original) The integrated repeater of claim 1 wherein said donor antenna and said null antenna each comprise an antenna array having a plurality of antenna elements and wherein said beamforming arrangement comprises a plurality of striplines, each having a length adjusted for variable stripline delay, coupled respectively with the antennas elements of the donor antenna array and null antenna array and a plurality of RF switches coupled with said striplines.

18. (Original) The integrated repeater of claim 1 wherein said donor antenna and said null antenna are mounted upon said opposing sides of said housing.

19. (Original) The integrated repeater of claim 1 wherein said donor antenna and said null antenna each comprise a fiat panel and said beamforming arrangement comprising a mounting structure for mounting each of said flat panels on one side of said housing for rotational movement relative to said housing.

20. (Original) An integrated repeater comprising:

a housing having opposing sides;

a donor antenna mounted closely adjacent to one of the opposing sides of said housing;

a null antenna mounted closely adjacent to the other of said opposing sides of said housing;

repeater electronics mounted in said housing and operatively interconnecting said donor antenna and said null antenna; and

said repeater electronics including an interference cancellation circuit for cancelling interference feedback signals between said donor antenna and said null antenna in both an uplink path and a downlink path.

21. (Original) The integrated repeater of claim 20 wherein said repeater electronics further include a downlink channel module and an uplink channel module operatively coupled between said donor and null antennas.

22. (Original) The integrated repeater of claim 20 wherein said donor antenna and said null antenna each include separate transmit and receive antenna arrays.

23. (Original) The integrated repeater of claim 20 wherein each of said donor and null antennas comprise an antenna array comprising a plurality of patch antenna elements arranged in a an M by N array.

24. (Original) The integrated repeater of claim 23 wherein said donor antenna and said null antenna each include separate transmit and receive antenna arrays.

25. (Original) The integrated repeater of claim 23 wherein each of said patch antenna elements comprises a reduced surface wave element.

26. (Original) The integrated repeater of claim 20 wherein said donor antenna and said null antenna each comprise an antenna array having a plurality of antenna

elements and wherein said beamforming arrangement includes a plurality of stripline feeds of varying lengths coupled with said antenna elements and a switching circuit for selecting said striplines to achieve a desired stripline delay.

27. (Original) The integrated repeater of claim 20 and further including a means for creating a desired antenna pattern of said donor antenna relative to a base station and a desired antenna pattern of said null antenna relative to subscriber equipment.

28. (Original) The integrated repeater of claim 27 wherein said donor antenna and said null antenna each comprise an antenna array having a plurality of antenna elements, and wherein said beamforming means includes a Butler matrix comprising part of said repeater electronics and operatively coupled with each of said donor antenna array and said null antenna array.

29. (Original) The integrated repeater of claim 20 wherein said repeater electronics further include a controller for providing setup, communications and monitoring functions for the repeater.

30. (Original) The integrated repeater of claim 27 wherein said repeater electronics further include a controller for providing setup, communications and monitoring functions for the repeater.

31. (Original) The integrated repeater of claim 30 wherein said donor antenna and said null antenna each comprise an antenna array having a plurality of antenna elements, wherein said beamforming means comprises a Butler matrix comprising part of said repeater electronics and operatively coupled with each of said donor antenna array

and said null antenna array, and further including a memory for storing angle and elevation information for use in operating said Butler matrix.

32. (Original) The integrated repeater of claim 31 wherein said repeater electronics include amplifiers coupled intermediate said donor antenna and said null antenna and further including a controller for setting an amplifier gain of said amplifiers, using information stored in said memory.

33. (Original) The integrated repeater of claim 20 wherein said interference cancellation circuit comprises an adaptive cancellation circuit which generates a cancellation signal, which when added to a radio frequency signal substantially cancels any feedback signal present in said radio frequency signal.

34. (Original The integrated repeater of claim 33 wherein said adaptive cancellation circuit comprises a digital signal processor circuit which receives an incoming radio frequency signal having a feedback signal component, and which digitally samples and processes said incoming radio frequency signal to generate an intermediate frequency signal, and a modulator circuit which receives said intermediate frequency signal and a sample of a radio frequency output signal and generates said cancellation signal.

35. (Original) The integrated repeater of claim 34 wherein said digital signal processor comprises a radio frequency downconverter which converts said incoming radio frequency signal to a lower frequency signal for digital sampling, an analog-to-digital converter coupled to the radio frequency downconverter, which analog-to-digital converter digitizes said lower frequency signal, and a processor coupled to the analog-to-

digital converter which computes a desired intermediate frequency signal for the modulator.

36. (Original) The integrated repeater of claim 34 wherein said adaptive cancellation circuit further includes a summing junction which receives and sums said intermediate frequency signal and said incoming radio frequency signal.

37. (Original) The integrated repeater of claim 36 wherein said digital signal processor circuit receives an output of said summing junction.

38. (Original) The integrated repeater of claim 35 wherein said modulator circuit comprises a controllable attenuator which receives and attenuates the radio frequency output signal and an I/Q modulator coupled to said attenuator and to said processor.

39. (Original) The integrated repeater of claim 27 wherein said donor antenna and said null antenna each comprise an antenna array having a plurality of antenna elements and wherein said beamforming means includes a plurality of phase shifters respectively coupled with the antenna elements in each of said donor antenna array and said null antenna array, a controller for controlling operation of said phase shifting elements, and said phase shifting elements being coupled with a corporate feed to a radio frequency output.

40. (Original) The integrated repeater of claim 27 wherein said donor antenna and said null antenna each comprise an antenna array having a plurality of antenna elements and wherein said beamforming means comprises a plurality of striplines having length adjusted for variable stripline delay and coupled respectively with the antennas

elements of the donor antenna array and null antenna array and a plurality of RF switches coupled with said striplines.

41. (Original) The integrated repeater of claim 27 wherein said donor antenna and said null antenna are mounted upon said opposing sides of said housing.

42. (Original) The integrated repeater of claim 27 wherein each of said donor antenna and said null antenna each comprise flat panels and wherein said beamforming means comprises a mounting structure for mounting each of said flat panels on one side of said housing.

43. (Original) The integrated repeater of claim 1 wherein said donor antenna and said null antenna each comprise a relatively flat antenna face having one or more antenna elements mounted thereon and a quantity of radio frequency absorbent material on each said antenna face.

44. (Original) The integrated repeater of claim 1 wherein said donor antenna and said null antenna each comprise a relatively flat antenna face having one or more antenna elements mounted thereon and a plurality of radio frequency chokes surrounding said antenna face.

45. (Original) The integrated repeater of claim 1 wherein said donor antenna and said null antenna each comprise a relatively flat antenna face having one or more antenna elements mounted thereon each of said antennas defining a peripheral edge surface, and a plurality of radio frequency chokes surrounding said peripheral edge surface.

46. (Original) The integrated repeater of claim 45 and further including a quantity of radio frequency absorbent material between at least some of said chokes.

47. (Original) The integrated repeater of claim 20 wherein said donor antenna and said null antenna each comprise a relatively flat antenna face having one or more antenna elements mounted thereon and a quantity of radio frequency absorbent material surround each said antenna face.

48. (Original) The integrated repeater of claim 20 wherein said donor antenna and said null antenna each comprise a relatively flat antenna face having one or more antenna elements mounted thereon and a plurality of radio frequency chokes surrounding said antenna face.

49. (Original) The integrated repeater of claim 20 wherein said donor antenna and said null antenna each comprise a relatively flat antenna face having one or more antenna elements mounted thereon, and a peripheral edge surface, and a plurality of radio frequency chokes surrounding said peripheral edge surface.

50. (Original) The integrated repeater of claim 49 and further including a quantity of radio frequency absorbent material between at least some of said chokes.

51. (Original) The integrated repeater of claim 45 and further including a quantity of radio frequency absorbent material on each said antenna face.

52. (Original) The integrated repeater of claim 47 and further including a plurality of radio frequency chokes surrounding said antenna face.

53. (Original) The integrated repeater of claim 19 wherein said donor antenna and said null antenna each comprise a relatively flat antenna face having one or more antenna elements mounted thereon and a peripheral edge surface, and a plurality of radio frequency chokes surrounding said peripheral edge surface.

54. (Original) The integrated repeater of claim 53 and further including a quantity of radio frequency absorbent material between at least some of said chokes and on each said antenna face.

55. (Canceled).

56. (Original) The integrated repeater of claim 1 wherein said donor antenna and said null antenna each comprise a relatively flat antenna face having one or more antenna elements mounted thereon and a quantity of radio frequency absorbent material on each said antenna face.

57. (Original) The integrated repeater of claim 1 wherein said donor antenna and said null antenna each comprise a relatively fiat antenna face having one or more antenna elements mounted thereon and a plurality of radio frequency chokes surrounding said antenna face.

58. (Original) The integrated repeater of claim 1 wherein said donor antenna and said null antenna each comprise a relatively fiat antenna face having one or more antenna elements mounted thereon and a peripheral edge surface, and a plurality of radio frequency chokes surrounding said peripheral edge surface.

59. (Original) The integrated repeater of claim 45 and further including a quantity of radio frequency absorbent material between said chokes.

60. (Canceled).

61. (Canceled).

62. (Canceled).

63. (Currently Amended) A method of repeating a radio frequency signal comprising:

receiving said radio frequency signal at one of a donor antenna mounted on one of opposing sides of a housing and a null antenna mounted on the other of said opposing sides of said housing;

routing said signal through repeater electronics mounted in said housing and operatively interconnecting said donor antenna and said null antenna;

transmitting said radio frequency signal from the other of said donor and null antennas; and

beamforming for a desired antenna pattern of said donor antenna and a desired antenna pattern of said null antenna, wherein said beamforming comprises selecting the lengths of a plurality of striplines coupled respectively with the antennas elements of the donor antenna array and null antenna array for variable stripline delay and RF switching said striplines.

64. (Original) The method of claim 63 further including cancelling radio frequency interference feedback signals between said donor and null antennas in both an uplink path and a downlink path.

65. (Original) The method of claim 63 and further including providing setup, communications and monitoring functions for the repeater.

66. (Original) The method of claim 64 further including providing setup, communications and monitoring functions for the repeater.

67. (Original) The method of claim 63 further including storing angle and elevation information for use in said beamforming.

68. (Original) The method of claim 63 further including setting an amplifier gain of amplifiers coupled intermediate said donor antenna and said null antenna.

69. (Original) The method of claim 64 further including storing angle and elevation information for use in beamforming.

70. (Original) The method of claim 69 further including setting an amplifier gain of amplifiers coupled intermediate said donor antenna and said null antenna.

71. (Original) The method of claim 63 wherein said beamforming includes phase shifting antenna elements in a donor antenna array and a null antenna array using a controller and coupling phase shifted signals via a corporate feed to a radio frequency output.

72. (Canceled).

73. (Original) The method of claim 63 wherein said beamforming comprises rotating said donor antenna and said null antenna.

74. (Original) A method of repeating a radio frequency signal comprising:

receiving said radio frequency signal at one of a donor antenna mounted on one of opposing sides of a housing and a null antenna mounted on the other of said opposing sides of said housing;

routing said signal through repeater electronics mounted in said housing operatively interconnecting said donor antenna and said null antenna;

transmitting said radio frequency signal from the other of said donor and null antennas; and

cancelling interference feedback signals between said donor antenna and said null antenna in both an uplink path and a downlink path.

75. (Original) The method of claim 74 and further including beamforming for creating a desired antenna pattern of said donor antenna and a desired antenna pattern of said null antenna.

76. (Original) The method of claim 74 wherein said cancelling interference feedback signals comprises generating a cancellation signal, which when added to a radio frequency signal substantially cancels any feedback signal present in said radio frequency signal.

77. (Original) The method of claim 76 wherein said generating comprises digitally sampling and processing an incoming radio frequency signal having a feedback signal component to generate an intermediate frequency signal, and processing said

intermediate frequency signal and a sample of a radio frequency output signal to generate said cancellation signal.

78. (Original) The method of claim 77 wherein said processing comprises converting said incoming radio frequency signal to a lower frequency signal for digital sampling, digitizing said lower frequency signal, and computing a desired intermediate frequency signal for the modulator.

79. (Original) The method of claim 77 further including summing said intermediate frequency signal and said incoming radio frequency signal.

80. (Original) The method of claim 77 wherein said processing comprises controllably attenuating the radio frequency output signal sample and JIQ modulating the attenuated signal sample.

81. (Original) The integrated repeater of claim 1 wherein the donor antenna and null antennas are orthogonally polarized.

82. (Original) The integrated repeater of claim 20 wherein the donor antenna and null antennas are orthogonally polarized.

83. (Original) The integrated repeater of claim 55 wherein the donor antenna and null antennas are orthogonally polarized.

84. (Original) The integrated repeater of claim 1 and further including a solar powered battery mounted to said housing.

85. (Original) The integrated repeater of claim 20 and further including a solar powered battery mounted to said housing.

86. (Original) The integrated repeater of claim 55 and further including a solar powered battery mounted to said housing.

87. (Canceled).

88. (New) A method of repeating a radio frequency signal comprising:

receiving said radio frequency signal at one of a donor antenna mounted on one of opposing sides of a housing and a null antenna mounted on the other of said opposing sides of said housing, wherein said donor antenna and said null antenna each comprise an antenna array having a plurality of antenna elements;

routing said signal through repeater electronics mounted in said housing and operatively interconnecting said donor antenna and said null antenna;

transmitting said radio frequency signal from the other of said donor and null antennas; and

beamforming for a desired antenna pattern of said donor antenna and a desired antenna pattern of said null antenna, wherein said beamforming comprises operating a Butler matrix comprising a part of said repeater electronics and operatively coupled with each of said donor antenna and said null antenna based upon angle and elevation information stored in a memory.

89. (New) A method of repeating a radio frequency signal comprising:

receiving said radio frequency signal at one of a donor antenna mounted on one of opposing sides of a housing and a null antenna mounted on the other of said opposing

sides of said housing, wherein said donor antenna and said null antenna each comprise a relatively flat antenna face having one or more antenna elements mounted thereon;

routing said signal through repeater electronics mounted in said housing and operatively interconnecting said donor antenna and said null antenna;

transmitting said radio frequency signal from the other of said donor and null antennas;

beamforming for a desired antenna pattern of said donor antenna and a desired antenna pattern of said null antenna; and

reducing coupling between said donor antenna and said null antenna using a plurality of radio frequency chokes surrounding said antenna face of each of said donor antenna and said null antenna.

90. (New) A method of repeating a radio frequency signal comprising:

receiving said radio frequency signal at one of a donor antenna mounted on one of opposing sides of a housing and a null antenna mounted on the other of said opposing sides of said housing, wherein said donor antenna and said null antenna each comprise a relatively flat antenna face having one or more antenna elements mounted thereon;

routing said signal through repeater electronics mounted in said housing and operatively interconnecting said donor antenna and said null antenna;

transmitting said radio frequency signal from the other of said donor and null antennas;

beamforming for a desired antenna pattern of said donor antenna and a desired antenna pattern of said null antenna; and

reducing coupling between said donor antenna and said null antenna using a plurality of radio frequency chokes surrounding a peripheral edge surface defined by each of said donor antenna and said null antenna.